Pacific Gas and Electric Company
Long Term Procurement Plan Proceeding

Renewable Integration Model
Comparison of Results

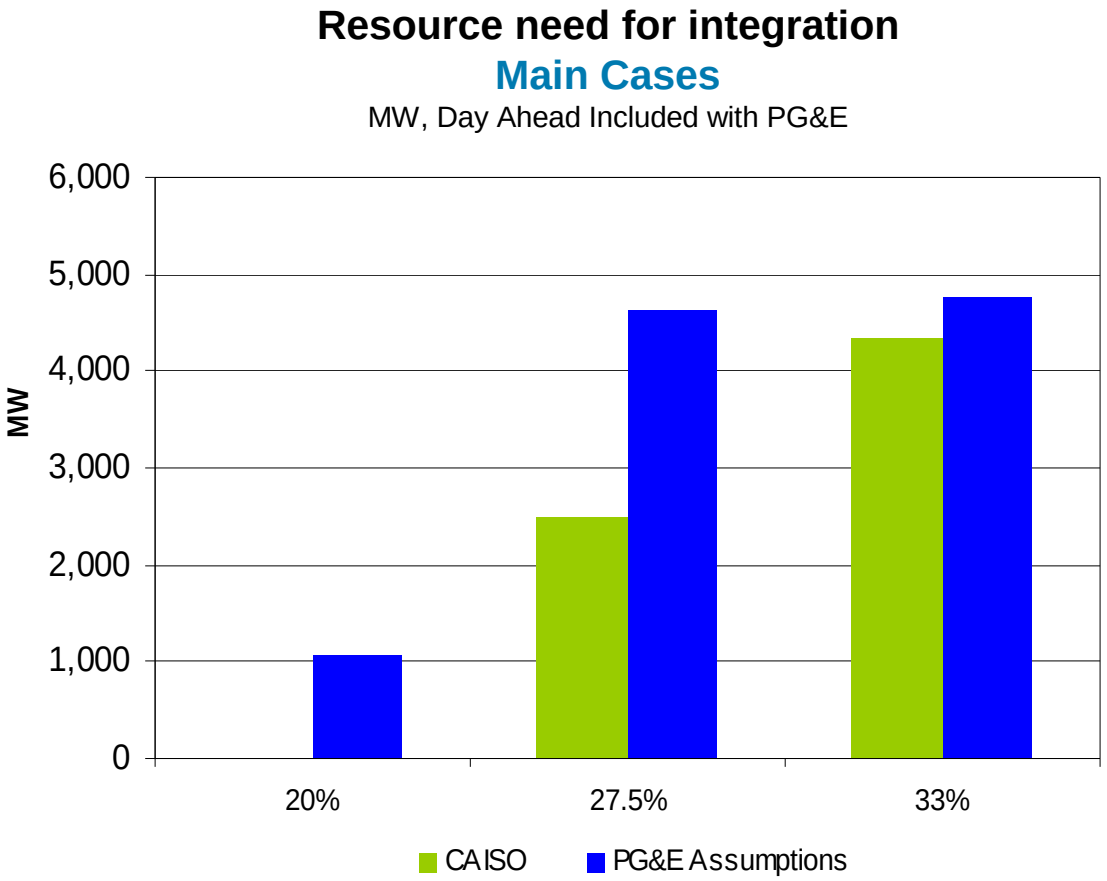
November 30, 2010 Workshop

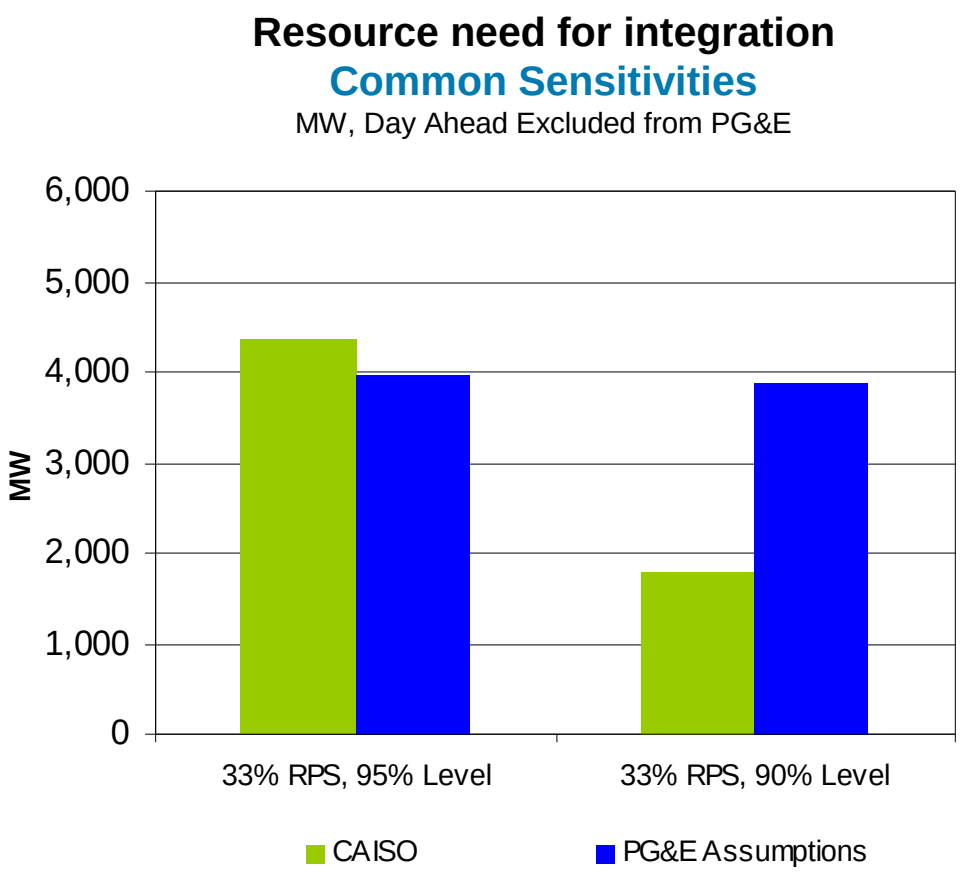
November 29, 2010 DRAFT

CAISO and RIM methodologies recap

	CAISO	RIM
Inputs	• Same peak and hourly load • Same installed wind/solar capacity and hourly profiles • Similar but different forecast error and variability assumptions	
Step 1 Operating Requirements	• Requirements include: regulation + load following • Requirements calculated with Monte Carlo simulation at 95% service level for the season	• Requirements include: regulation + load following + multi-hour unit commitment • Requirements calculated from statistical calculations with an adjustable service level
Step 2 Resource Need for Integration	• Uses Plexos simulations to determine resources to cover avoid violations • Integration need is resource needed above 17% PRM	• Uses incremental approach to determine resource need to meet reliability and flexibility requirements • Integration need is resource need above 15% PRM

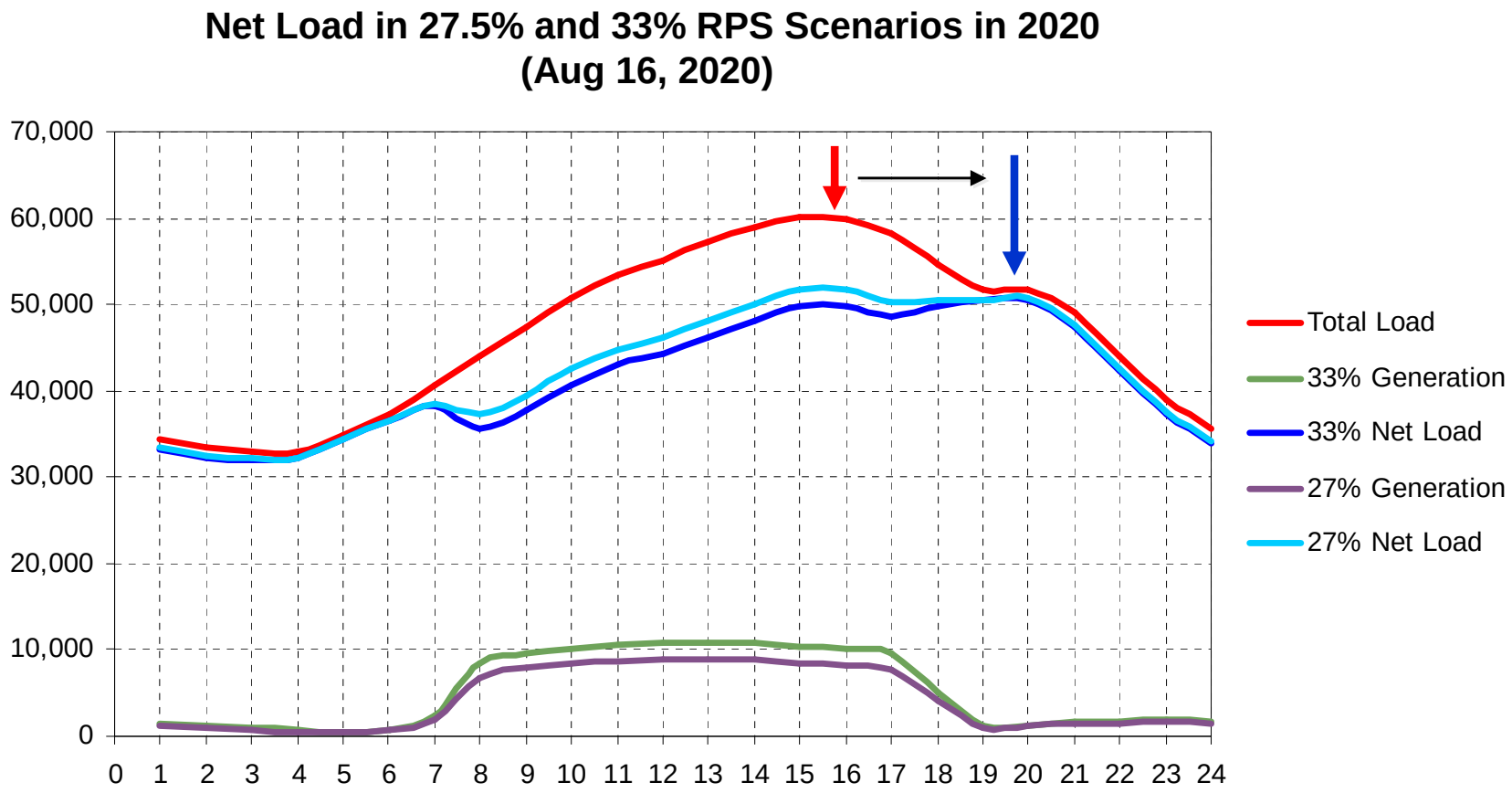
Comparison of Step 2 results
Resource needed above PRM requirement for integration





Shift in Critical Hour Drives Results

Renewable additions shift critical hour to hours when there is low renewable production



Explanation of differences in Step 2

- Both methodologies produce similar results for the main 33% RPS scenarios
  - RIM's need is higher than CAISO's if day-ahead commitment is included
  - RIM is lower without day-ahead commitment
- Differences in results for the 27.5% RPS and the 90% level sensitivities cannot be explained without further testing. Differences result from a combination of drivers:
  - Difference in PRM (15% vs. 17% PRM)
  - Day-ahead commitment
  - Incremental vs. Total analysis
  - September vs. all 12 month analysis (not enough time to run all 12 months thru Plexos for some sensitivities)
  - Solar error differences